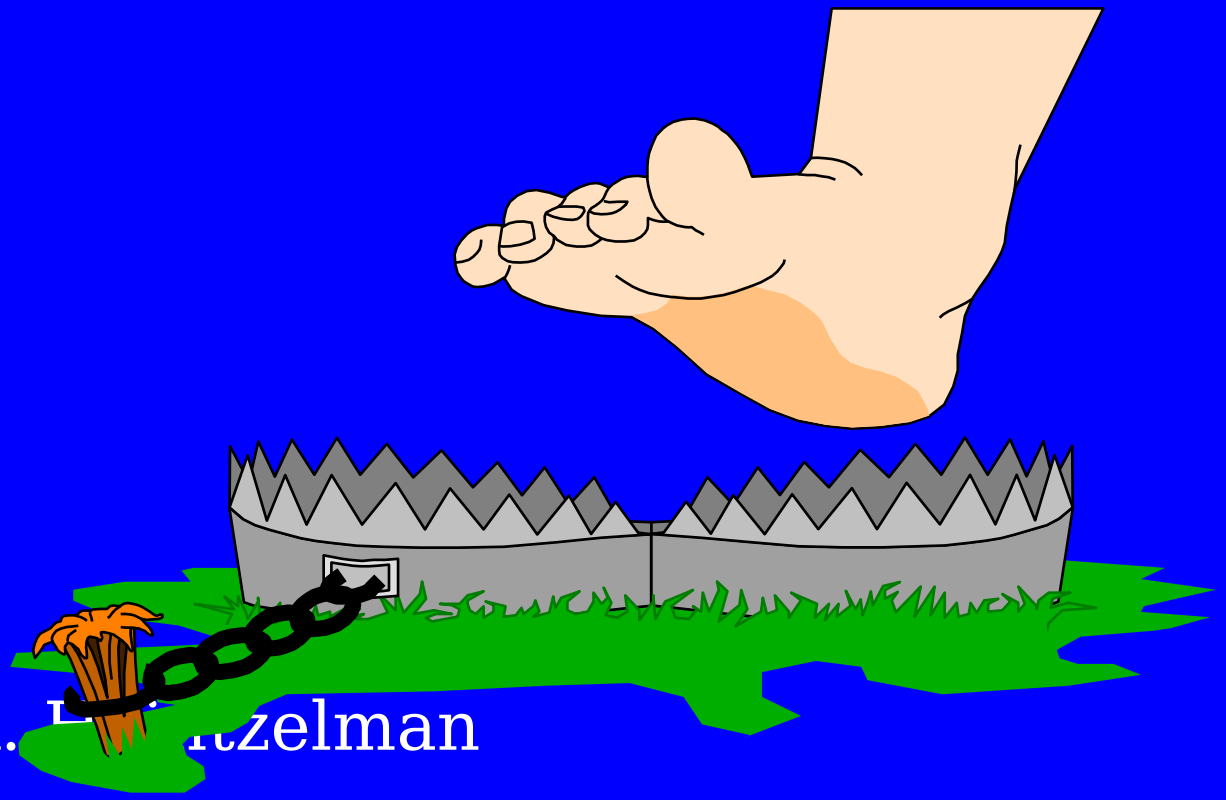
SOFT TISSUE INJURIES



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OVERVIEW

- Open and closed injuries
- Burns
- Dressing and bandaging

Review the Skin

- Function * Protection - barrier against germs, debris. * Water balance - loss and chemical balance. * Temperature - blood vessels dilate/constrict to regulate temperature. * Excretion - salts, carbon dioxide & sweat * Impact absorption - skin & fat layers protect underlying organs.

Layers

- Epidermis - outermost layer.
- Dermis - middle layer rich in blood vessels, nerves, oil glands & hair follicles.
- Subcutaneous - fat and soft tissue below the dermis.

Types of Closed

- Contusion (bruise)
- Hematoma
- Crush injuries

Contusion

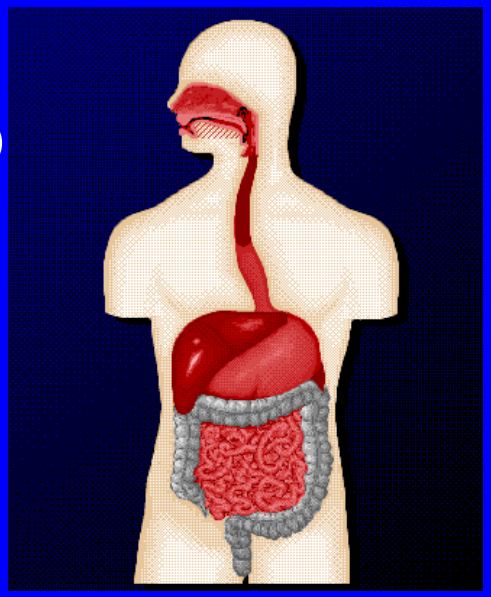
- Contusion or bruise
  - Epidermis remains intact
  - Cells are damaged and blood vessels torn in the dermis
  - Swelling and pain are typically present
  - Blood accumulation causes discoloration

Hematoma

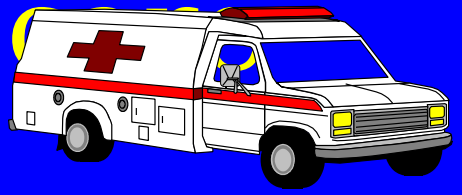
- Collection of blood beneath the skin
- Larger amount of tissue damage as compared to contusion
- Larger vessels are damaged
- May lose one or more liters of blood

Crush injuries

- Crushing force applied to the body.
- Can cause internal organ rupture.
- Internal bleeding may be with shock (hypoperfusio



Emergency medical care



- Relationship to body substance isolation
  - Gloves
  - Hand washing
- Proper airway/artificial ventilation/oxygenation
- If shock (hypoperfusion) or internal bleeding is suspected - Treat for shock (hypoperfusion)
- Splint a painful, swollen, deformed extremity
- Transport

Open

- Types
  - Abrasion
    - Outermost layer of skin is damaged by shearing forces.
    - Painful injury, even though superficial.
    - No or very little oozing of blood.

Figure 30-4 Abrasions.

Laceration

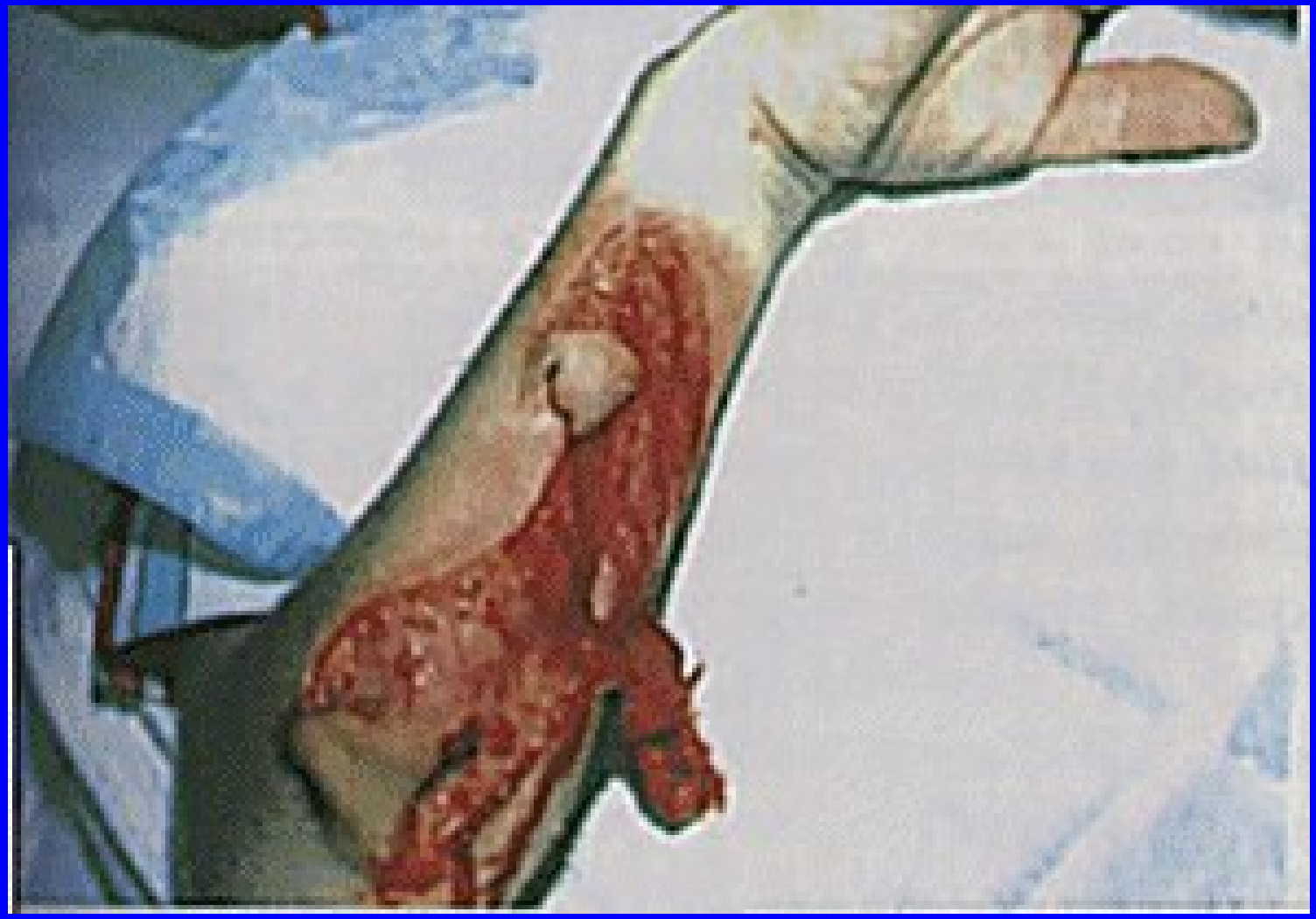
- Break in skin of varying depth
- May be linear (regular) or stellate (irregular) and occur in isolation or together with other types of soft tissue injury
- Caused by forceful impact with sharp object
- Bleeding may be severe

Figure 30-6a Lacerations.

Figure 30-6b Laceration.

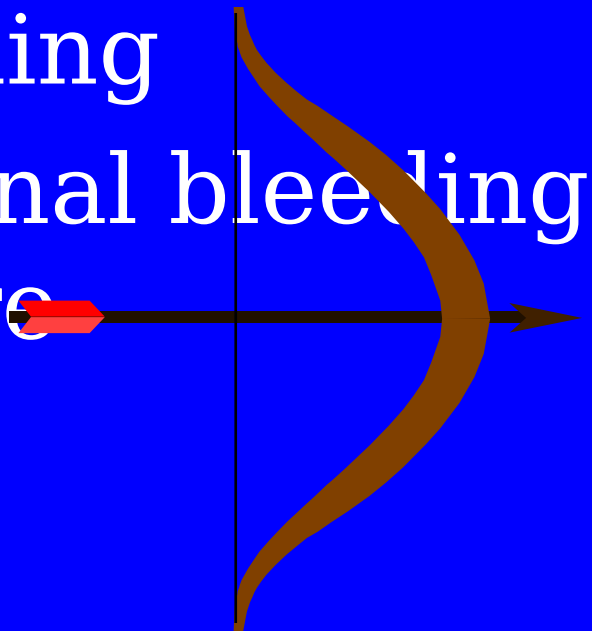
Avulsion

- Flaps of skin or tissue are torn loose or pulled completely off



Penetration/puncture

- Caused by sharp pointed object
- May be no external bleeding
- Internal bleeding may be severe



Examples:

- Gun shot wound
- Stab wound

Amputations

- Involves the extremities and other body parts
- Massive bleeding may be present or bleeding may be limited

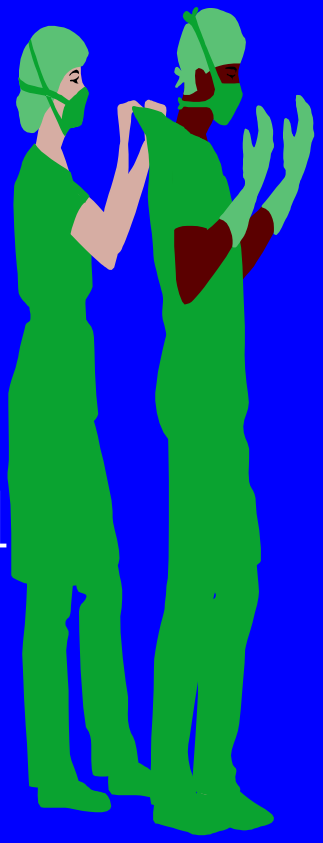
igure 30-8a Finger amputation.

Crush injuries

- Damage to soft tissue and internal organs
- May cause painful, swollen, deformed extremities
- External bleeding may be minimal or absent
- Internal bleeding may be severe

Emergency medical care - open soft tissue injuries

- Relationship to body substance isolation
  - Gloves
  - Gown
  - Eye protection
  - Hand washing
- Maintain proper airway/artificial ventilation/oxygenation



Management of open soft tissue injuries

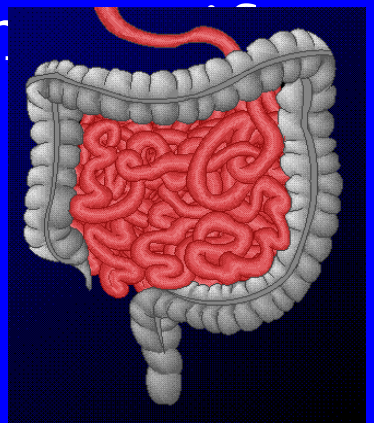
- Expose the wound
- Control the bleeding
- Prevent further contamination
- Apply dry sterile dressing to the wound and bandage securely in place
- Keep the patient calm and quiet
- Treat for shock (hypoperfusion) if signs and symptoms are present

Chest injuries - occlusive dressing to open wound

- Administer oxygen if not already done
- Position of comfort if no spinal injury suspected

Abdominal injuries - evisceration (organs protruding through the wound)

- Do not touch or try to replace the exposed organ
- Cover exposed organs and wound with a sterile dressing, moistened with sterile water or saline, and secure in place.
- Flex the patient's hips and kn[illegible] uninjured.

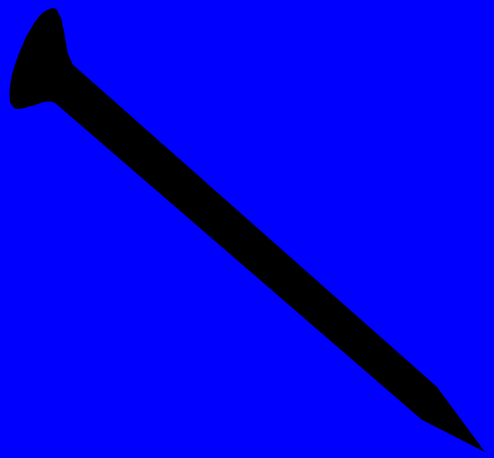


Impaled objects

- Do not remove the impaled object, unless it is through the cheek, it would interfere with chest compressions, or interferes with transport.
- Manually secure the object.
- Expose the wound area.

Impaled Objects Cont.

- Control bleeding.
- Utilize a bulky dressing to help stabilize the object.



Amputations - concerns for re-attachment

- Wrap the amputated part in a sterile dressing
- Wrap or bag the amputated part in plastic and keep cool
- Transport the amputated part with the patient
- Do not complete partial amputations
- Immobilize to prevent further injury

igure 30-8a Finger amputation.

Large open neck injury

- May cause air embolism.
- Cover with an occlusive dressing.
- Compress carotid artery only if necessary to control bleeding.

Burns

- Classification - according to depth

Superficial - involves only the epidermis

- Reddened skin
- Pain at the site

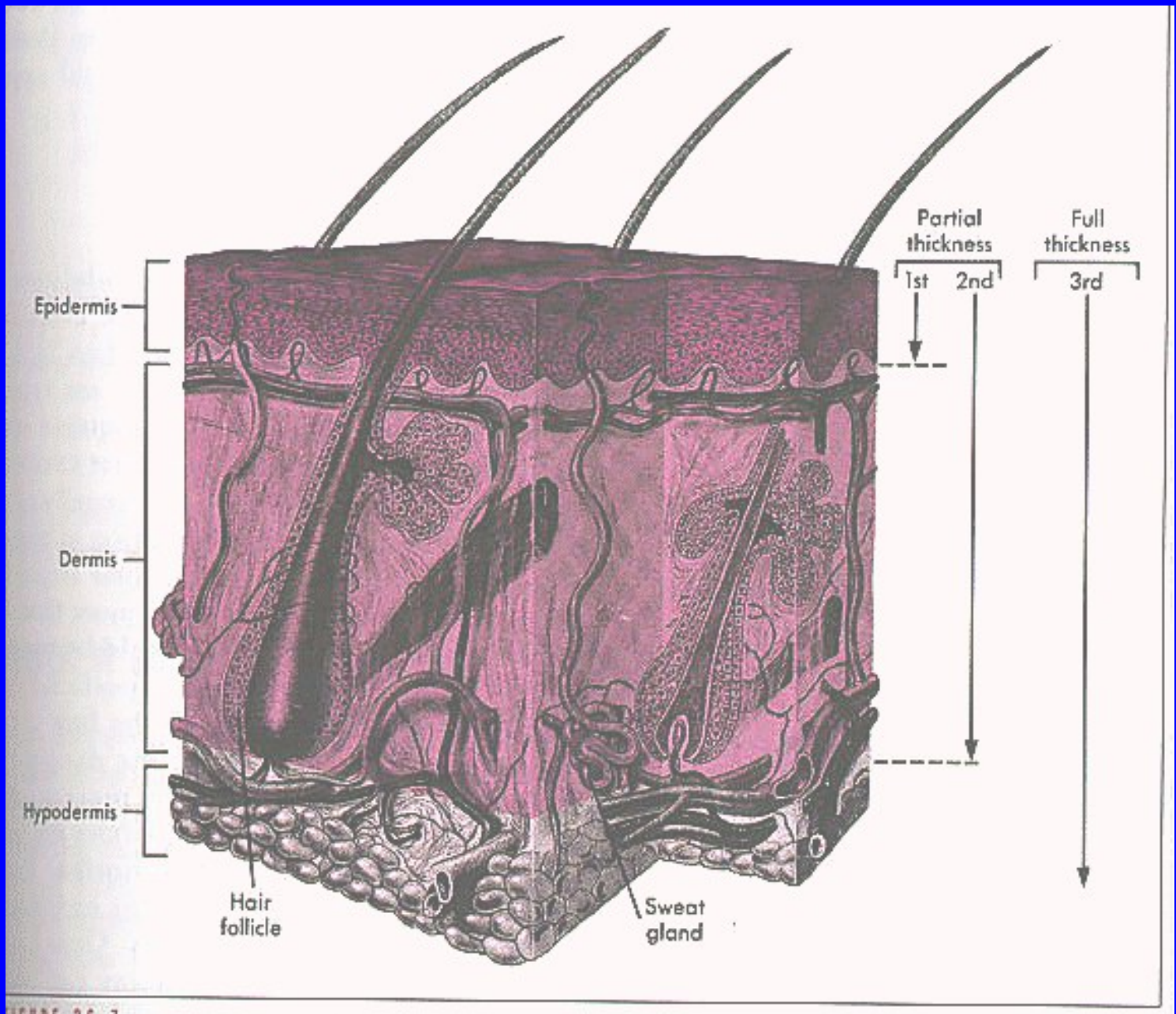


FIGURE 26.7
Parts of the skin damaged by different types of burns.

Partial thickness

- Involves both the epidermis and the dermis, but does not involve underlying tissue.
- Intense pain.
- White to red skin that is moist and mottled.
- Blisters.

FIGURE 26.9

Partial-thickness burn.

Full thickness

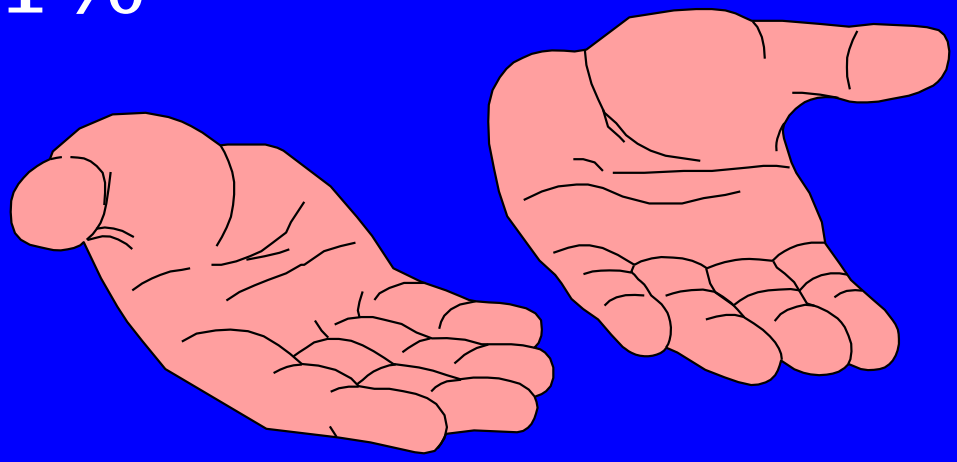
- Burn extend through all the dermal layers and may involve subcutaneous layers, muscle, bone or organs.
- Skin becomes dry and leathery and may appear white, dark brown or charred.
- Loss of sensation - little or no pain, hard to the touch, pain at periphery.

Severity

- Depth or degree of the burn
  - Superficial
  - Partial thickness
  - Full thickness

Rule of Palm

- Percentage of body area burned - size of the patient's hand is equal to 1%



Rule of nines

- Adult
  - Head and neck - 9%
  - Each upper extremity - 9%
  - Anterior trunk - 18%
  - Posterior trunk - 18%
  - Each lower extremity - 18%
  - Genitalia - 1%

Infant

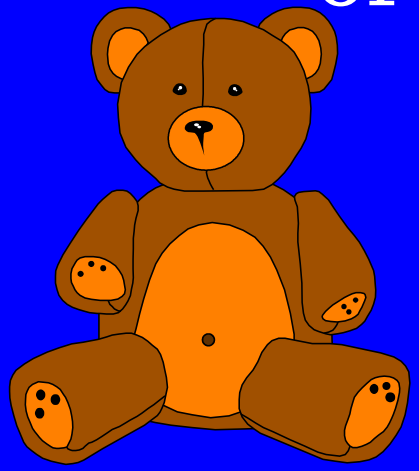
- Head and neck - 18%
- Each upper extremity - 9%
- Anterior trunk - 18%
- Posterior trunk - 18%
- Each lower extremity - 14%
- Genitalia-1%

Location of the burn

- Face and upper airway
- Hands
- Feet
- Genitalia

Pre-existing medical conditions

- Age of the patient
  - Less than five years of age.
  - Greater than fifty-five years of age.



Determine severity

Critical burns

- Full thickness burns involving the hands, feet, face, or genitalia
- Burns associated with respiratory injury
- Full thickness burns covering more than 10% of the body surface

Severity - Critical(cont'd)

- Partial thickness burns covering more than 30% of the body surface area.
- Burns complicated by painful, swollen, deformed extremity.
- Moderate burns in young children or elderly patients.
- Burns encompassing any body part e.g. arm, leg, or chest.

Moderate burns

- Full thickness burns of 2 to 10% of the body surface area excluding hands, feet, face, genitalia and upper airway.
- Partial thickness burns of 15 to 30% of the body surface area.
- Superficial burns of greater than 50% body surface area.

Minor burns

- Full thickness burns of less than 2% of the body surface area.
- Partial thickness burns of less than 15% of the body surface area.
- Exit wound may be present.

Emergency medical care - Burns

- Stop the burning process, initially with water or saline.
- Remove smoldering clothing and jewelry.
- Body substance isolation.
- Continually monitor the airway for evidence of closure.
- Prevent further contamination.

- Cover the burned area with a dry sterile dressing
- Do not use any type of ointment, lotion or antiseptic
- Do not break blisters
- Transport
- Know local protocols for transport to appropriate local facility

Infant and child considerations

- Relative size
  - Greater surface area in relationship to the total body size
  - Results in greater fluid and heat loss
  - Any full thickness burn or partial thickness burn greater than 20%, or burn involving the hands, feet, face , airway or genitalia is considered to be a critical burn in a child

Infant and child (Cont.)

- Any partial thickness burn of 10 to 20% is considered a moderate burn in a child
- Any partial thickness burn less than 10% is considered a minor burn
- Higher risk for shock (hypoperfusion), airway problem or hypothermia
- Consider possibility of child abuse

Chemical burns

- Take the necessary scene safety precautions to protect yourself from exposure to hazardous materials
- Wear gl eye protecti

Emergency medical care - chemical burns

- Dry powders should be brushed off prior to flushing
- Immediately begin to flush with large amounts of water
- Continue flushing the contaminated area when en route to the receiving facility
- Do not contaminate uninjured areas
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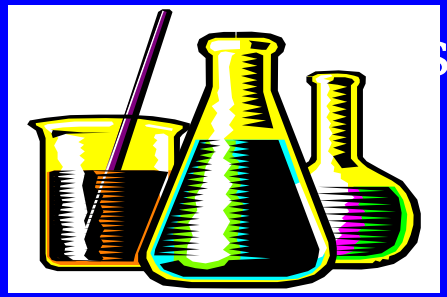


Electrical burns

- Scene safety
  - Do not attempt to remove patient from the electrical source unless trained to do so.
  - If the patient is still in contact with the electrical source or you are unsure, do not touch the patient.

Emergency medical care - electrical burns

- Administer oxygen if indicated.
- Monitor the patient closely for respiratory and cardiac arrest (consider need for AED).
- Often more severe than external indications.
- Treat the soft tissue injuries associated with the burn.
- Look for both an entrance and exit wound

Dressing and Bandaging

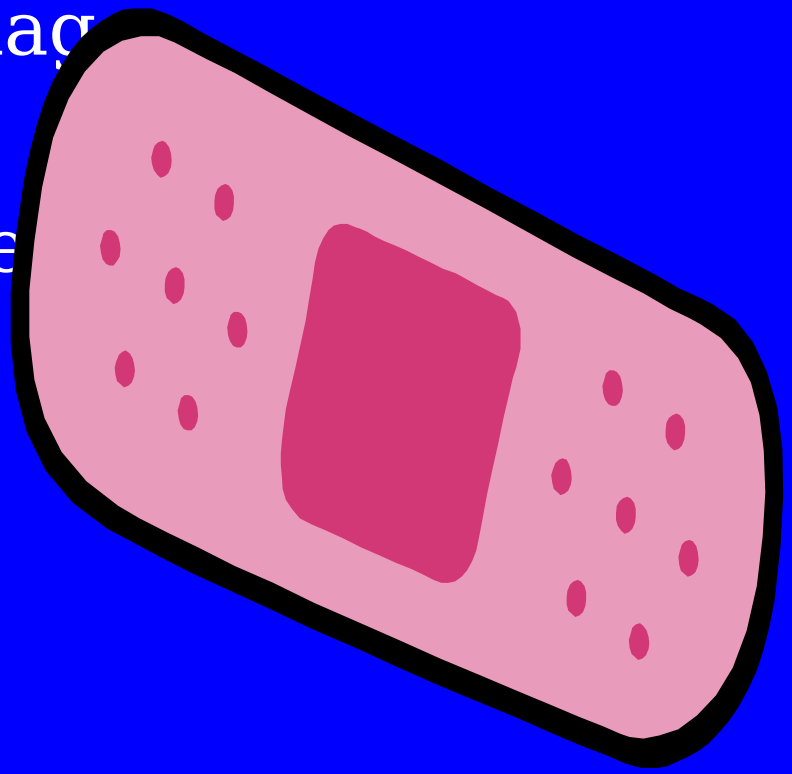
- Function
  - Stop bleeding.
  - Protect the wound from further damage.
  - Prevent further contamination and infection.

Dressings

- Universal dressing
- 4 X 4 inch gauze pads
- Adhesive - type
- Occlusive

Bandages

- Purpose - holds dressing in place
- Types
  - Self-adherent bandag
  - Gauze rolls
  - Triangular bandage
  - Adhesive tape
  - Air splint



SUMMARY

- Open and closed injuries.
- Burns.
- Dressing and bandaging.

Procedural (How)

- 1. Show diagrams of the various layers of the skin.
- 2. Show diagrams of the various types of soft tissue injuries.
- 3. Demonstrate the procedure for treating a closed soft tissue injury.
- 4. Demonstrate the procedure for treating an open soft tissue injury.

- 5. Demonstrate the necessary body substance isolation that must be taken when dealing with soft tissue injuries.
- 6. Demonstrate the proper method for applying an occlusive dressing.
- 7. Demonstrate the proper method for stabilizing an impaled object.

- 8. Demonstrate the proper method of treating an evisceration.
- 9. Show a diagram illustrating a superficial, partial thickness, and full thickness burn.
- 10. Demonstrate the proper treatment for a superficial, partial thickness, and full thickness burn.

- 11. Show the various types of dressings and bandages.
- 12. Demonstrate the proper method for applying a universal dressing, 4 X 4 inch dressing, and adhesive type dressing.

- 13. Demonstrate the proper method for applying bandages: self-adherent, gauze rolls, triangular, adhesive tape, and air splints.
- 14. Demonstrate the proper method for applying a pressure dressing.

- Soft tissue injuries, unless life threatening, will be treated after the initial assessment. The EMT-Basic will treat soft tissue injuries prior to the movement of the patient unless the patient condition warrants immediate transport.

- Major bleeding will be treated prior to the movement of the patient. Failure to treat soft tissue injuries could lead to severe external hemorrhage, further damage to the injury or further contamination.